R & D CATALOG FORM

DATE 18 May 1965 25X1

1. PROJECT TITLE/CODE NAME

Study of Capabilities of Coherent Light Enlarger

2. SHORT PROJECT DESCRIPTION

A study to evaluate the coherent light enlarger and determine its capabilities in enlarging aerial photography.

5. CLASS OF CONTRACTOR

Scientific Laboratory

6. TYPE OF CONTRACT

Time & Materials 25X1

7. FUNDS

FY 19 $

8. REQUISITION NO.

N/A

10. EFFECTIVE CONTRACT DATE (Begin - end)

FY 19 $

Aug 1965 - March 1966

12. RESPONSIBLE DIRECTORATE/OFFICE/PROJECT OFFICER TELEPHONE EXTENSION

DDI/NPIC/P&DS 25X1 25X1

13. REQUIREMENT/AUTHORITY

Required to thoroughly and objectively evaluate the prototype Coherent Light Enlarger and to establish the proper techniques for the enlargement of all types of aerial photography with maximum efficiency.

14. TYPE OF WORK TO BE DONE

Applied Research 25X1

15. CATEGORIES OF EFFORT

MAJOR CATEGORY	SUB-CATEGORIES
Image Analysis Program	Enlargers
	Light Sources

16. END ITEM OR SERVICES FROM THIS CONTRACT/IMPROVEMENT OVER CURRENT SYSTEM, EQUIPMENT, ETC.

The end item will be a final report with intermediate monthly reports. Upon completion of the study, the Coherent Light Enlarger Prototype will be shipped to the NPIC. 25X1 25X1

17. SUPPORTING OR RELATED CONTRACTS (Agency & Other)/COORDINATION

The prototype coherent light enlarger was fabricated under contract in FY-63 has done basic theoretical work in establishing test procedures for the enlarger under the extension of contract a basic research study in image analysis.

18. DESCRIPTION OF INTELLIGENCE REQUIREMENT AND DETAILED TECHNICAL DESCRIPTION OF PROJECT (Continue on additional page if required) 25X1

The prototype coherent light enlarger was built in anticipation of a need to exploit very high-resolution photography. This type of photography would contain more information than could be extracted by conventional means. To circumvent this problem a new, very-high resolution enlarger would need to be developed to enlarge the photography to a size such, that when viewed with conventional viewers all the information could be extracted. The use of coherent light was proposed and adopted in building a prototype enlarger because of the theoretical advantages such a source of illumination would have in minimizing...

19. APPROVED BY AND DATE

OFFICE	DEPUTY DIRECTOR	DDCI
		25X1

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SECRET

GROUP 1 Excluded from automatic downgrading and declassification

R&D Catalog Form continued... [redacted] 25X1

18. the loss of resolution.

Now that the prototype is completed we discover that a coherent light source creates some effects which could not be anticipated before the prototype was built. These effects create a major problem in evaluating and effectively utilizing the enlarger.

25X1 [redacted] is the only contractor that has proposed what we consider a valid test procedure. This company has thoroughly studied and discussed the problem with our technical staff. In addition this company can be more objective in evaluating the Coherent Light Enlarger because of the fact that the company is a research laboratory not a manufacturing concern.

25X1 [redacted] proposes to carry out this study in the following manner:

1. Measure the coherency of the illumination in the object plane
25X1 with the [redacted] "Coherent Enlarger" operating in each of its modes.

2. Measure the appropriate transfer function in each mode of operation.

3. Determine a testing procedure which may be used to select the most desireable type of illumination (coherent or incoherent) for the enlargement of a given target negative.

25X1 4. Compare the quality of [redacted] enlargements with those obtained with a standard incoherent enlarger such as an Omega.

25X1 5. Compare the quality of [redacted] enlargements obtained with coherent and incoherent illumination.

This study will directly support the Plans and Development Staff in evaluating this prototype device and the photo lab who would be the final recipients of the finished product. The study will indirectly support the whole intelligence community in exploiting very high resolution photography.